Complete Summary

GUIDELINE TITLE

Diabetes management in correctional institutions.

BIBLIOGRAPHIC SOURCE(S)

American Diabetes Association. Diabetes management in correctional institutions. Diabetes Care 2006 Jan;29 Suppl 1:S59-66. [15 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Diabetes management in correctional institutions. Diabetes Care 2005 Jan;28(suppl 1):S53-60.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

- Type 1 diabetes mellitus
- Type 2 diabetes mellitus
- Gestational diabetes mellitus

GUIDELINE CATEGORY

Management

CLINICAL SPECIALTY

Endocrinology
Family Practice
Internal Medicine
Obstetrics and Gynecology
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Dietitians
Health Care Providers
Nurses
Optometrists
Physician Assistants
Physicians
Podiatrists
Public Health Departments

GUIDELINE OBJECTIVE(S)

To provide recommendations for the management of children, adolescents, and adults with diabetes in the correctional institution setting

TARGET POPULATION

Incarcerated children, adolescents, and adults who have diabetes mellitus

INTERVENTIONS AND PRACTICES CONSIDERED

Screening and Evaluation

1. Reception screening to include:
    - Identification of inmates with diabetes currently using insulin therapy or at high risk for hypoglycemia
    - Screening capillary blood glucose (CBG) and urine ketone test (as clinically indicated)
    - Continue usual meal schedule and medication administration
2. Intake screening to include:
    - Type and duration of diabetes
    - Confirm current therapy
    - Presence of complications
    - Family history
    - Pregnancy screen for all female patients of childbearing age with diabetes
    - Assess alcohol use
    - Identify behavioral health issues, such as depression, distress, suicidal ideation
    - Assess prior diabetes education
    - Differentiation of type of diabetes
3. Intake physical exam/laboratory complications screening

- Complete exam including:
    - Height, weight
    - Blood pressure measurement
    - Eye (retinal) examination
    - Cardiovascular examination
    - Peripheral pulses
    - Foot inspection and neurologic examination
- Laboratory studies:
    - Glycated hemoglobin (HbA1c) and glucose measurement
    - Lipid profile
    - Microalbumin screen (albumin-to-creatinine ratio)
    - Urine ketones (as clinically indicated)
    - Aspartate aminotransferase (AST)/alanine aminotransferase (ALT)
    - Creatinine (as clinically indicated)

Treatment/Management

1. Patient education regarding self management
2. Nutrition counseling and menu planning
3. Staff training to recognize and respond appropriately to urgent and emergency issues (e.g., hyperglycemia, hypoglycemia)
4. Medication administration (e.g., insulin)
5. Routine screening and management of diabetes complications including:
    - Foot care
        - Annual comprehensive foot exam
        - Special shoes as indicated
    - Retinopathy:
        - Annual retinal examination by licensed eye care professional
    - Nephropathy:
        - Annual spot urine test
        - Treatment with angiotensin converting enzyme (ACE) inhibitors/angiotensin receptor blockers as indicated
    - Cardiac
        - Blood pressure measurement
        - Lipid disorder testing
        - Aspirin therapy as indicated

6. Considerations for special populations (e.g., children, adolescents, and pregnant patients)
7. Referral to specialist as indicated (e.g., pregnant patients)
8. Monitoring/tests of glycemia (capillary blood glucose and glycated hemoglobin testing)
9. Transfer and discharge
    - Medical transfer summary
    - Diabetes supplies and medication
    - Continuity of care

MAJOR OUTCOMES CONSIDERED

Prevalence of diabetes among incarcerated population

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

American Diabetes Association's Evidence Grading System for Clinical Practice Recommendations

A

Clear evidence from well-conducted, generalizable, randomized controlled trials that are adequately powered, including:

- Evidence from a well-conducted multicenter trial
- Evidence from a meta-analysis that incorporated quality ratings in the analysis
- Compelling non-experimental evidence (i.e., "all or none" rule developed by the Center for Evidence Based Medicine at Oxford*)

Supportive evidence from well-conducted randomized, controlled trials that are adequately powered, including:

- Evidence from a well-conducted trial at one or more institutions
- Evidence from a meta-analysis that incorporated quality ratings in the analysis

*Either all patients died before therapy and at least some survived with therapy, or some patients died without therapy and none died with therapy. Example: use of insulin in the treatment of diabetic ketoacidosis.

B

Supportive evidence from well-conducted cohort studies, including:

- Evidence from a well-conducted prospective cohort study or registry
- Evidence from a well-conducted meta-analysis of cohort studies

Supportive evidence from a well-conducted case-control study

C

Supportive evidence from poorly controlled or uncontrolled studies, including:

- Evidence from randomized clinical trials with one or more major or three or more minor methodological flaws that could invalidate the results
- Evidence from observational studies with high potential for bias (such as case series with comparison with historical controls)
- Evidence from case series or case reports

Conflicting evidence with the weight of evidence supporting the recommendation

E

Expert consensus or clinical experience

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Recommendations have been assigned ratings of A, B or C, depending on the quality of evidence (see "Rating Scheme for the Strength of the Evidence"). Expert opinion (E) is a separate category for recommendations in which there is as yet no evidence from clinical trials, in which clinical trials may be impractical, or in which there is conflicting evidence. Recommendations with an "A" rating are based on large, well-designed clinical trials or well done meta-analyses. Generally, these recommendations have the best chance of improving outcomes when applied to the population to which they are appropriate. Recommendations with lower levels of evidence may be equally important but are not as well supported.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The paper was revised by the American Diabetes Association/National Commission on Correctional Health Care Joint Working Group on Diabetes Guidelines for Correctional Institutions. It was reviewed and approved by the American Diabetes Association's Professional Practice Committee and Executive Committee of the Board of Directors.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The evidence grading system (A through C, E) is defined at the end of the "Major Recommendations" field.

Intake Medical Assessment

- Patients with a diagnosis of diabetes should have a complete medical history and undergo an intake physical examination by a licensed health professional in a timely manner. (E)
- Insulin-treated patients should have a capillary blood glucose (CBG) determination within 1 to 2 hours of arrival. (E)
- Medications and medical nutrition therapy (MNT) should be continued without interruption upon entry into the correctional environment. (E)

Screening for Diabetes

Consistent with the American Diabetes Association (ADA) Standards of Care, patients should be evaluated for diabetes risk factors at the intake physical and at appropriate times thereafter. Those who are at high risk should be considered for blood glucose screening. If pregnant, a risk assessment for gestational diabetes mellitus (GDM) should be undertaken at the first prenatal visit. Patients with clinical characteristics consistent with a high risk for GDM should undergo glucose testing as soon as possible. High-risk women not found to have GDM at the initial screening and average-risk women should be tested between 24 and 28 weeks of gestation. For more detailed information on screening for both type 2 and GDM, see the National Guideline Clearinghouse (NGC) summaries of the ADA guidelines Screening for Diabetes, and Detection and Diagnosis of Gestational Diabetes Mellitus (GDM).

Management Plan

Summary of Recommendations for Adults with Diabetes Mellitus

Glycemic Control

- Glycated hemoglobin (A1C): <7.0%
    - Referenced to a nondiabetic range of 4.0 to 6.0% using a Diabetes Control and Complications Trial-based assay
- Preprandial plasma glucose: 90 to 130 mg/dL (5.0 to 7.2 mmol/L)
- Postprandial plasma glucose: <180 mg/dL (<10.0 mmol/L)

Blood Pressure

- <130/80 mmHg

Lipids

- Low-density lipoprotein (LDL): <100 mg/dL (<2.6 mmol/L)
- Triglycerides: <150 mg/dL (<1.7 mmol/L)
    - Current National Cholesterol Education Program/Adult Treatment Panel III guidelines (U.S. National Heart, Lung and Blood Institute) suggest that in patients with triglycerides $\geq$200 mg/dL, the "non-HDL cholesterol" (total cholesterol minus high-density lipoprotein [HDL]) should be managed to achieve a level $\leq$130 mg/dL.
- HDL: >40 mg/dL (>1.1 mmol/L)
    - For women, it has been suggested that the HDL goal be increased by 10 mg/dL.

Key Concepts in Setting Glycemic Goals

- Goals should be individualized.
- Certain populations (children, pregnant women, and the elderly) require special considerations.
- Less intensive glycemic goals may be indicated in patients with severe or frequent hypoglycemia.
- More stringent glycemic goals (i.e., a normal A1C, <6%) may further reduce complications at the cost of increasing hypoglycemia (particularly in those with type 1 diabetes).
- Postprandial glucose may be targeted if A1C goals are not met despite reaching preprandial glucose goals.

Urgent and Emergency Issues

- Train correctional staff in the recognition, treatment, and appropriate referral for hypo- and hyperglycemia. (E)
- Train appropriate staff to administer glucagon. (E)
- Train staff to recognize symptoms and signs of serious metabolic decompensation, and immediately refer the patient for appropriate medical care. (E)
- Institutions should implement a policy requiring staff to notify a physician of all CBG results outside of a specified range, as determined by the treating physician (e.g., <50 or >350 mg/dL). (E)

- Identify patients with type 1 diabetes who are at high risk for diabetic ketoacidosis (DKA). (E)

Medication

- Formularies should provide access to usual and customary oral medications and insulins to treat diabetes and related conditions. (E)
- Patients should have access to medication at dosing frequencies that are consistent with their treatment plan and medical direction. (E)
- Correctional institutions and police lock-ups should implement policies and procedures to diminish the risk of hypo- and hyperglycemia during off-site travel (e.g., court appearances). (E)

Routine Screening for and Management of Diabetes Complications

All patients with a diagnosis of diabetes should receive routine screening for diabetes-related complications, as detailed in the ADA's Standards of Care (See the NGC summary of the ADA guideline, Prevention and Management of Diabetes Complications). Interval chronic disease clinics for persons with diabetes provide an efficient mechanism to monitor patients for complications of diabetes. In this way, appropriate referrals to consultant specialists, such as optometrists/ophthalmologists, nephrologists, and cardiologists, can be made on an as needed basis and interval laboratory testing can be done.

The following complications should be considered.

- Foot care: Recommendations for foot care for patients with diabetes and no history of an open foot lesion are described in the American Diabetes Association's Standards of Care. A comprehensive foot examination is recommended annually for all patients with diabetes to identify risk factors predictive of ulcers and amputations. Persons with an insensate foot, an open foot lesion, or a history of such a lesion should be referred for evaluation by an appropriate licensed health professional (e.g., podiatrist or vascular surgeon). Special shoes should be provided as recommended by licensed health professionals to aid healing of foot lesions and to prevent development of new lesions.
- Retinopathy: Annual retinal examinations by a licensed eye care professional should be performed for all patients with diabetes, as recommended in the American Diabetes Association's Standards of Care. Visual changes that cannot be accounted for by acute changes in glycemic control require prompt evaluation by an eye care professional.
- Nephropathy: An annual spot urine test for determination of microalbumin-to-creatinine ratio should be performed. The use of angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers is recommended for all patients with albuminuria. Blood pressure should be controlled to <130/80 mmHg.
- Cardiac: People with type 2 diabetes are at a particularly high risk of coronary artery disease. Cardiovascular disease risk factor management is of demonstrated benefit in reducing this complication in patients with diabetes. Blood pressure should be measured at every routine diabetes visit. In adult patients, test for lipid disorders at least annually and as needed to achieve goals with treatment. Use aspirin therapy (75-162 mg/day) in all adult

patients with diabetes and cardiovascular risk factors or known macrovascular disease. Current national standards for adults with diabetes call for treatment of lipids to goals of low-density lipoprotein ≤100, HDL >40, triglycerides <150 mg/dL, and blood pressure to a level of <130/80 mmHg.

Monitoring/Tests of Glycemia

- In the correctional setting, policies and procedures need to be developed and implemented to enable CBG monitoring to occur at the frequency necessitated by the individual patient's glycemic control and diabetes regimen. (E)
- A1C should be checked every 3 to 6 months. (E)

Staff Education

- Include diabetes in correctional staff education programs. (E)

Transfer and Discharge

- For all interinstitutional transfers, complete a medical transfer summary to be transferred with the patient. (E)
- Diabetes supplies and medication should accompany the patient during transfer. (E)
- Begin discharge planning with adequate lead time to insure continuity of care and facilitate entry into community diabetes care. (E)

Definitions:

American Diabetes Association's Evidence Grading System for Clinical Practice Recommendations

A

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- Evidence from a well-conducted multicenter trial
- Evidence from a meta-analysis that incorporated quality ratings in the analysis
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*Either all patients died before therapy and at least some survived with therapy, or some patients died without therapy and none died with therapy. Example: use of insulin in the treatment of diabetic ketoacidosis.

B

Supportive evidence from well-conducted cohort studies:

- Evidence from a well-conducted prospective cohort study or registry
- Evidence from a well-conducted prospective cohort study
- Evidence from a well-conducted meta-analysis of cohort studies

Supportive evidence from a well-conducted case-control study

C

Supportive evidence from poorly controlled or uncontrolled studies, including:

- Evidence from randomized clinical trials with one or more major or three or more minor methodological flaws that could invalidate the results
- Evidence from observational studies with high potential for bias (such as case series with comparison with historical controls)
- Evidence from case series or case reports

Conflicting evidence with the weight of evidence supporting the recommendation

E

Expert consensus or clinical experience

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Ongoing diabetes therapy is important in order to reduce the risk of later complications, including cardiovascular events, visual loss, renal failure, and amputation. Early identification and intervention for people with diabetes is also likely to reduce short-term risks for acute complications requiring transfer out of the facility, thus improving security.

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This document provides a general set of guidelines for diabetes care in correctional institutions. It is not designed to be a diabetes management manual.
- Evidence is only one component of clinical decision-making. Clinicians care for patients, not populations; guidelines must always be interpreted with the needs of the individual patient in mind. Individual circumstances, such as comorbid and coexisting diseases, age, education, disability, and, above all, patient's values and preferences, must also be considered and may lead to different treatment targets and strategies. Also, conventional evidence hierarchies, such as the one adapted by the American Diabetes Association, may miss some nuances that are important in diabetes care. For example, while there is excellent evidence from clinical trials supporting the importance of achieving glycemic control, the optimal way to achieve this result is less clear. It is difficult to assess each component of such a complex intervention.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

In recent years, numerous health care organizations, ranging from large health care systems such as the U.S. Veteran's Administration to small private practices have implemented strategies to improve diabetes care. Successful programs have published results showing improvement in important outcomes such as A1C measurements and blood pressure and lipid determinations as well as process measures such as provision of eye exams. Successful interventions have been focused at the level of health care professionals, delivery systems, and patients. Features of successful programs reported in the literature include:

- Improving health care professional education regarding the standards of care through formal and informal education programs.
- Delivery of diabetes self-management education (DSME), which has been shown to increase adherence to standard of care.
- Adoption of practice guidelines, with participation of health care professionals in the process. Guidelines should be readily accessible at the point of service, such as on patient charts, in examining rooms, in "wallet or pocket cards," on personal digital assistants (PDAs), or on office computer systems. Guidelines should begin with a summary of their major recommendations instructing health care professionals what to do and how to do it.
- Use of checklists that mirror guidelines have been successful at improving adherence to standards of care.
- System changes, such as provision of automated reminders to health care professionals and patients, reporting of process and outcome data to providers, and especially identification of patients at risk because of failure to achieve target values or a lack of reported values.

- Quality improvement programs combining continuous quality improvement or other cycles of analysis and intervention with provider performance data.
- Practice changes, such as clustering of dedicated diabetes visits into specific times within a primary care practice schedule and/or visits with multiple health care professionals on a single day and group visits.
- Tracking systems either with an electronic medical record or patient registry have been helpful at increasing adherence to standards of care by prospectively identifying those requiring assessments and/or treatment modifications. They likely could have greater efficacy if they suggested specific therapeutic interventions to be considered for a particular patient at a particular point in time.
- A variety of non-automated systems, such as mailing reminders to patients, chart stickers, and flow sheets, have been useful to prompt both providers and patients.
- Availability of case or (preferably) care management services, usually by a nurse. Nurses, pharmacists, and other non-physician health care professionals using detailed algorithms working under the supervision of physicians and/or nurse education calls have also been helpful. Similarly dietitians using medical nutrition therapy (MNT) guidelines have been demonstrated to improve glycemic control.
- Availability and involvement of expert consultants, such as endocrinologists and diabetes educators.

Evidence suggests that these individual initiatives work best when provided as components of a multifactorial intervention. Therefore, it is difficult to assess the contribution of each component; however, it is clear that optimal diabetes management requires an organized, systematic approach and involvement of a coordinated team of health care professionals.

IMPLEMENTATION TOOLS

Personal Digital Assistant (PDA) Downloads

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American Diabetes Association. Diabetes management in correctional institutions. Diabetes Care 2006 Jan;29 Suppl 1:S59-66. [15 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1989 (revised 2006 Jan)

GUIDELINE DEVELOPER(S)

American Diabetes Association - Professional Association

SOURCE(S) OF FUNDING

The American Diabetes Association received an educational grant from LifeScan, Inc., a Johnson and Johnson Company, to support publication of the 2006 Diabetes Care Supplement.

GUIDELINE COMMITTEE

Professional Practice Committee

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Diabetes management in correctional institutions. Diabetes Care 2005 Jan;28(suppl 1):S53-60.

GUIDELINE AVAILABILITY

Electronic copies: Available from the American Diabetes Association (ADA) Web site.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Introduction. Diabetes Care 29:S1-S2, 2006
- Strategies for improving diabetes care. Diabetes Care 29:S34-S35, 2006.

Electronic copies: Available from the American Diabetes Association (ADA) Web site.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on April 2, 2001. The information was verified by the guideline developer on August 24, 2001. This summary was updated by ECRI on January 29, 2002, July 29, 2003, May 26, 2004, March 18, 2005, and March 17, 2006.

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